REMARKS

Applicant has amended the second paragraph starting on page 1 and ending on page 2 to correct two minor errors. No new matter has been added to the application as a result of this amendment.

In view of the above amendment and Applicant's comments stated herein, Applicant respectfully requests an early and favorable action on the merits.

Respectfully submitted,

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Marked Up Version of the Specification

It is known theoretically and ~~experimetally~~ **experimentally** that by reducing a resonator length of an end light emitting type semiconductor laser down to 200 micrometers, it is possible to lower a threshold value current flow and increase a mitigation oscillation frequency. Fig. 1 shows a calculation example of resonator-length-dependency of the laser threshold value current, mitigation oscillation frequency, and series resistance. A laser active layer is assumed to have a lattice-distortion-based InGaAsP multi-quantum well structure. From this figure, it is clear that the short resonator is advantageous for lowering a threshold value current and increase a mitigation oscillation frequency. However, when the resonator becomes shorter, the series resistance is remarkably increased and accordingly, current application to the laser is accompanied by Joule heat, thereby significantly deteriorating the optical output characteristic. For example, when the resonator has length of 100 micrometers, the series resistance reaches 20 ohms, which is four times greater than the laser resonator of 400 micrometers that is normally used. From this view point, as has been described above, the performance improvement of the semiconductor laser by reducing the resonator length can actually be realized only to 200 micrometers. On the other hand, it is known that in a distribution reflection type laser, by reducing the active area length, it is possible to obtain a stable longitudinal mode and increase the wave length changeable width. This is because a mode jump interval $\Delta\lambda$ of the distribution reflection type laser and an active area length La are in the relationship as follows: $\Delta\lambda = \lambda 2/2nLa$, wherein n represents a refractive index of the laser medium and λ represents an oscillation wavelength. In this case also, when the resonator and the active area are reduced so as to increase the $\Delta\lambda$, the laser gain is lowered, and the electric resistance and thermal resistance are increased. Accordingly, although the aforementioned effect is reported, it still cannot be used actually in practice. It should be noted that this type of semiconductor laser is described in the 17th Semiconductor Laser International Conference, technical digest paper ~~ThA4~~ **ThA5.**